

V. REMARKS

Claims 1-6 and 8-10 are rejected under 35 U.S.C. 102(b) as anticipated by Caprioli (U.S. Patent No. 5,808,300). The rejection is respectfully traversed.

Caprioli teaches a method and apparatus for imaging biological samples with MALDI MS. Specifically, the spatial arrangement of specific molecules is analyzed within a sample. A test specimen that includes a thin sample layer with an energy absorbant matrix is generated. The test specimen is struck with a laser beam such that a predetermined first laser spot on the test specimen releases first sample molecules. The molecular atomic mass of the released first sample molecules is measured over a range of atomic masses. The test specimen is moved relative to the laser beam a predetermined linear distance functionally related to a size of a predetermined first laser spot. Thereafter, the task specimen is struck with a laser beam such that a predetermined second laser spot on the task specimen releases second sample molecules. The molecular atomic mass of the released second sample molecules is measured over a range of atomic masses. An atomic mass window of interest within the range of atomic masses is analyzed to determine the spatial arrangement of specific molecules within the sample.

Claim 1 is directed to a sample preparation method for preparing a sample to be analyzed on a sample plate for a laser desorption ionization mass spectrometric method which applies a laser beam onto the sample placed on the sample plate attached to a mass spectrometer so that the sample is ionized. Claim 1 recites that the sample plate has one portion of areas on the sample plate surface as an ionization area used for ionizing the sample through laser irradiation and another portion on the sample plate surface is prepared as a plane area to which a membrane bearing the sample adsorbed thereon is fixed. Claim 1 further recites the steps of:

fixedly holding the membrane bearing the sample adsorbed thereon on the plane area;

extracting a sample from the membrane that has been fixedly held; and
placing the extracted sample on the ionization area.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each step of claim 1. Specifically, it is respectfully submitted that

the applied art fails to teach the steps of fixedly holding the membrane bearing the sample adsorbed thereon on the plane area, extracting a sample from the membrane that has been fixedly held and placing the extracted sample on the ionization area. As a result, it is respectfully submitted that claim 1 is allowable over the applied art.

Claim 9 is directed to a sample plate, which is attached to, and used in a laser desorption ionization mass spectrometer, with a sample to be analyzed being placed on the surface thereof, so that the sample is ionized through irradiation with a laser beam. Claim 9 recites an ionization area which is used for ionizing the sample through laser irradiation to the surface thereof and a plane area to which a membrane bearing the sample adsorbed thereon is fixed.

It is respectfully submitted that the rejection is improper because the applied art fails to teach each element of claim 9. Specifically, it is respectfully submitted that the applied art fails to teach an ionization area which is used for ionizing the sample through laser irradiation to the surface thereof and a plane area to which a membrane bearing the sample adsorbed thereon is fixed. As a result, it is respectfully submitted that claim 9 is allowable over the applied art.

In addition, the Examiner describes the sample plate (22) of Caprioli in the Office Action, page 2, lines 15- 18 as follows:

the sample plate (22) having one portion of areas on the sample plate (22) surface as an ionization area used for ionizing the sample through laser irradiation, and another portion on the sample plate surface being prepared as a plane area to which a membrane bearing the sample adsorbed thereon is fixed.

It is respectfully submitted that above assertion is incorrect. From the designated disclosures by the Examiner, Fig. 29, Col. 2, lines 55-64, col. 3, lines 24-42, and col. 8, lines 45-62, the sample target 22 containing a test sample is a membrane target which is precoated with MALDI matrix and was used for deposition of effluent existing from a CE device. Therefore, the ionization of the test sample is carried out on the membrane, but not on any other area than the membrane. It is respectfully submitted that there is no such an ionization area on the sample plate 22 other than the membrane area of Caprioli.

In contrast, the sample plate of the present invention has an ionization area and a membrane area as different areas from each other.

Claims 2-6 depend from claim 1 and include all of the features of claim 1. Claim 10 depends from claim 9 and includes all of the features of claim 9. Thus, it is respectfully submitted that the dependent claims are allowable at least for the reasons the independent claims are allowable as well as for the features they recite.

For instance, claim 2 recites that the method for ionization of the sample is a matrix-assisted laser desorption ionization method and the sample to be placed on the ionization area is formed by using a matrix. Claim 3 recites that, in the step of fixedly holding the membrane bearing the sample adsorbed to the plane area, a medium in which the sample is developed is superposed on the membrane so that, after the sample has been transferred from the medium to the membrane by applying a voltage between the medium and membrane, the membrane is fixedly held in a state in which the membrane is electrically conducted to the sample plate. Claim 6 recites that, prior to extracting the sample from the membrane, the sample adsorbed on the membrane is modified. For these additional reasons, it is respectfully submitted that claims 2, 3 and 6 are allowable over the applied art.

Withdrawal of the rejection is respectfully requested.

Claims 7, 11 and 12 are rejected under 35 U.S.C. 103(a) as unpatentable over Caprioli in view of Brown et al. (U.S. Patent Application Publication No. 2003/0116707). The rejection is respectfully traversed.

Brown teaches a MALDI sample plate and includes a metallic substrate having a circular grooves formed in its top surface. Hydrophobic polytetrafluoroethylene layer is applied to the substrate and a central portion of the substrate is laser etched which roughens the surface of the substrate. A polystyrene layer is then applied to the polytetrafluoroethylene layer and central portion.

Claim 7 depends from claim 1 and includes all of the features of claim 1. Claims 11 and 12 depend from claim 9 and include all of the features of claim 9. Thus, it is respectfully submitted that the dependent claims are allowable at least for the reasons the independent claims are allowable as well as for the features they recite.

Withdrawal of the rejection is respectfully requested.

Further, newly-added claims 13-18 also include features not shown in the applied art.

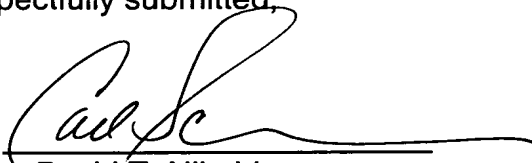
In view of the foregoing, reconsideration of the application and allowance of the pending claims are respectfully requested. Should the Examiner believe anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' representative at the telephone number listed below.

Should additional fees be necessary in connection with the filing of this paper or if a Petition for Extension of Time is required for timely acceptance of the same, the Commissioner is hereby authorized to charge Deposit Account No. 18-0013 for any such fees and Applicant(s) hereby petition for such extension of time.

Respectfully submitted,

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